

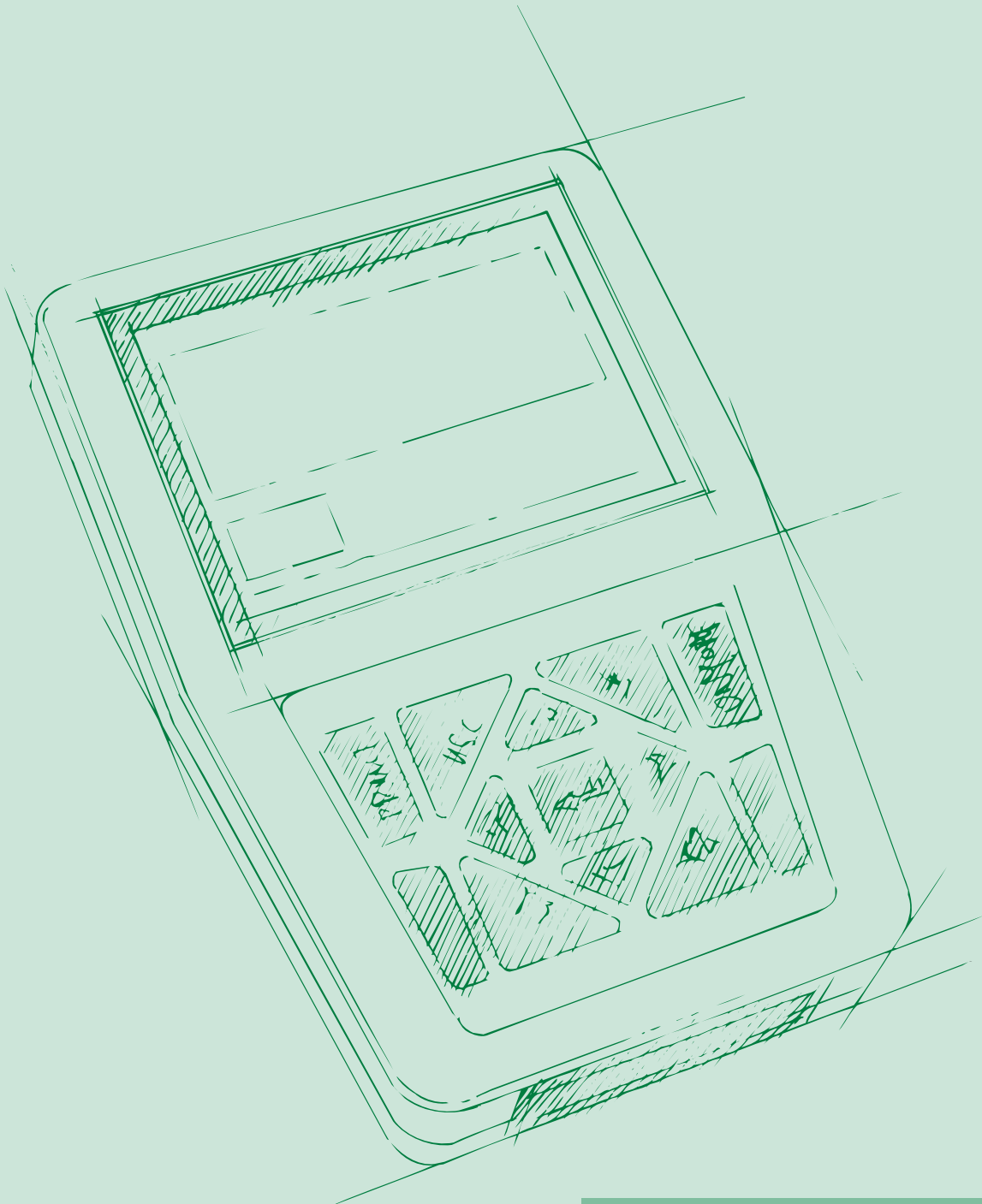


GUTMANN
DIAGNOSTICS

S O L U T I O N S

User's Manual

mega macs 50



HBMM50V3200EN1207So



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DEVICE DESCRIPTION

mega macs 50 is a portable diagnostic device for the identification and rectification of faults in vehicle electronic systems. This manual contains a detailed explanation as to its use etc. All the illustrations are examples.

Uses

Control unit communications:

- Reading/deleting fault codes
- Reading parameters and present in graphic form
- Actuator test
- Service reset
- Basic settings
- Coding

Measuring functions:

- Voltage, current, resistance, temperature
- Two-channel multimeter



mega macs 50 TFT display and keypad

Key	Function
	Print
	Escape/return
	Function keys
	Cursor up/down
	Cursor to the right
	Cursor to the left
	ENTER key
	On/off switch

> Print <

If mega macs 50 is connected to a PC, data can be transmitted and printed out. The >Gutmann Portal< programme must be installed on the PC (see section D4).

Printing	
Print window	The current window will be printed
Diagnosis folder printer	The diagnosis folder is opened, and the selected diagnosis printed.
Diagnosis folder e-mail	Not yet released
Remote support enquiry	Not yet released
Start remote	Linked to Gutmann >Remote< programme
Send protocol data	Not yet released

mega macs 50 - Top

Connecting sockets from left to right



Connections	
Test connection, minus	Channel 2
Test connection, plus	Channel 2
Diagnostic connection	ST2 for diagnostic cable and current clamp
Test connection, plus	Channel 1
Test connection, minus	Channel 1

mega macs 50 - Bottom

Connecting sockets from left to right



Connections	
Mains	Power supply unit and charger
USB device	PC connection for data update and communication with PC programs
USB host	External hardware activation
Serial interface	RS232

mega macs 50 - Back



Extending support



Rating plate

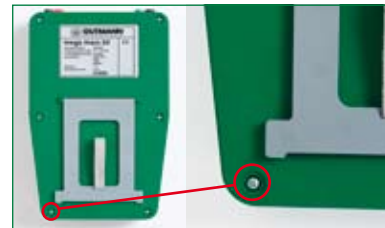
Changing the rechargeable batteries

Procedure:

1. Switch off mega macs 50 and remove all connecting leads.
2. Remove the protective casing, starting at the narrow end.



3. Remove six fastening screws using a suitable tool, e.g. >PH1<.



4. Open up the back panel to the right.



CAUTION

Do not pull off any cable plugs.

5. Carefully lever off the plastic cover using a suitable tool.



6. Replace the batteries, pay attention to correct polarity.
7. Reassemble in the reverse order.



NOTE

Recycle used batteries in accordance with the applicable environmental and disposal regulations.

Screen functions

The display consists of a header, a selection- or display window and a footer.

Header

The header is highlighted in green and displays the current menu option.

Selection window

The selection window is highlighted in blue and displays the menu options.

mega macs 50 > Diagnosis > Peugeot > 306 Diesel

306 1.9 D	WJY (DW8)	00-01
306 1.9 D	DJZ (XUD9Y)	93-00
306 2.0 D HDI	RHY (DW10TD)	99-01
306 1.9 TD	DJY (XUD9A)	94-99
306 1.9 D	WJZ (DW8)	98-00



F3 Search

Header

Selection window

Footer

Checking display



Checking display functions	
red	No connection with external systems
yellow	External systems connected, mega macs ready for communication.
green/yellow flashing	Active communication with external systems

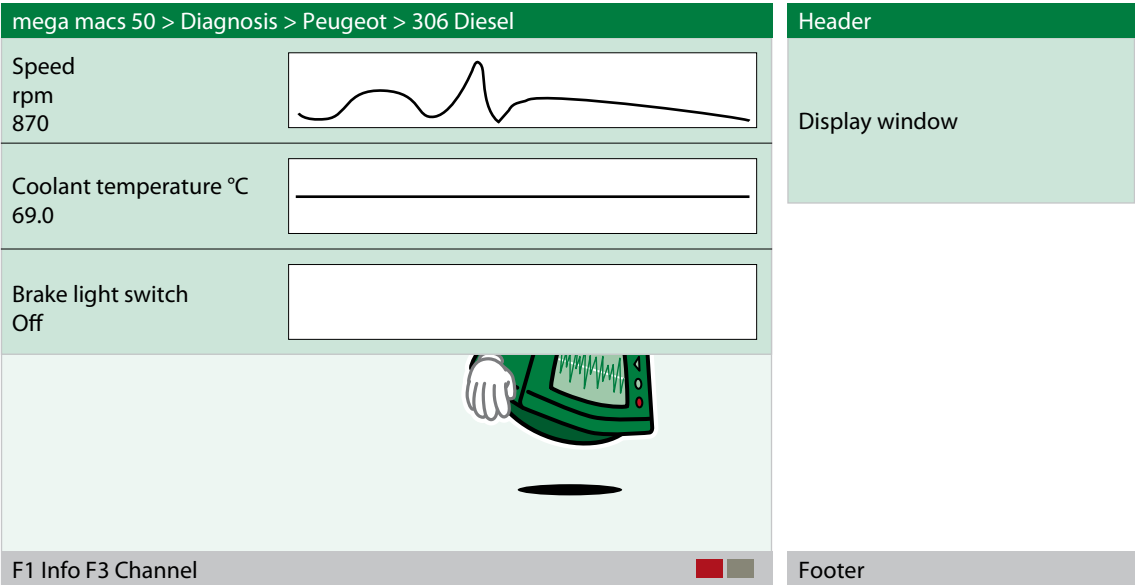
Use

Procedure:

Select and confirm line.  

Display window

The display window is highlighted in blue and depicts all values and information.



Footer

The footer indicates the significance of the function keys. Keys F1, F2 and F3 bring up a text corresponding to the selected menu, explaining its function.

Example: F1 Info, F3 Channel

A selection window is opened with the F2 menu function key. Functions are called up according to the menu option.

Example: F2 zero balance, zero line and trigger.

SETTINGS

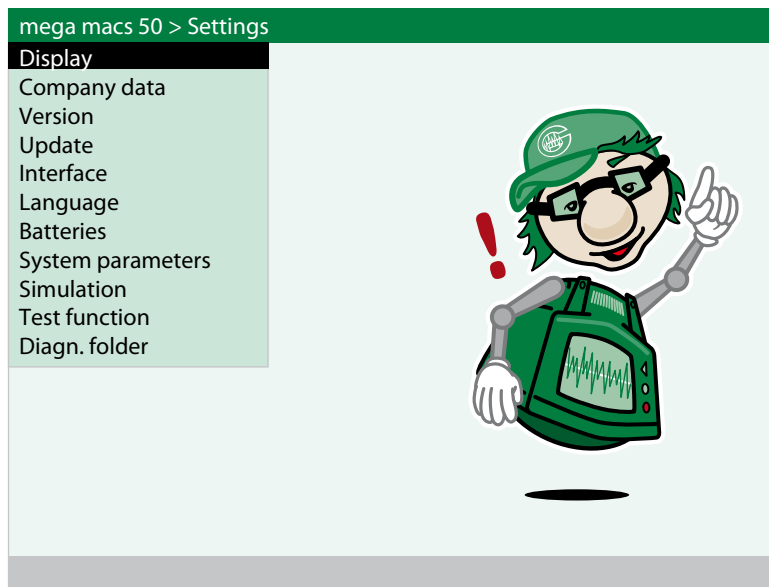
All the programs required to

- adjust
- check and
- install updates

to mega macs 50 are stored in the main > Settings < menu.

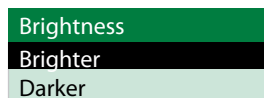
Settings > Display <

The brightness of the display can be adjusted in the > Display < menu.



Procedure:

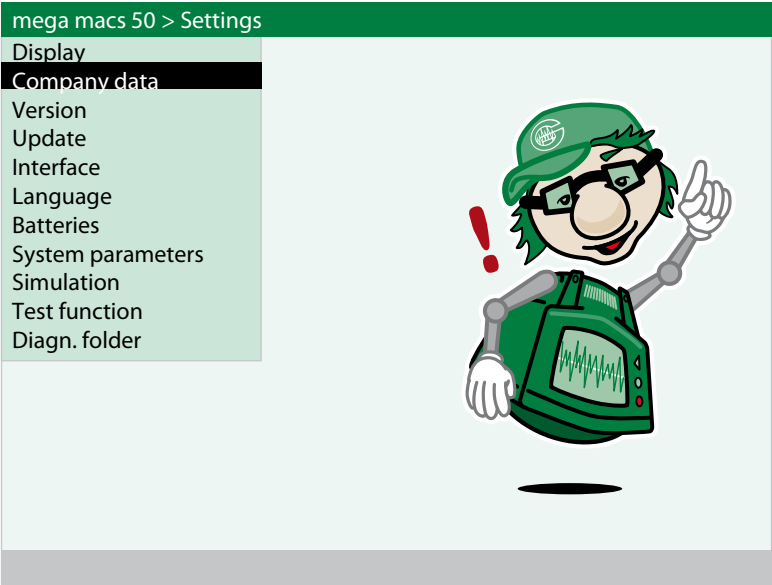
1. Select and confirm > Display < .  



2. Select brighter/darker. 
3. Change setting: press and hold  key.
4. Return with 

Settings > Company data <

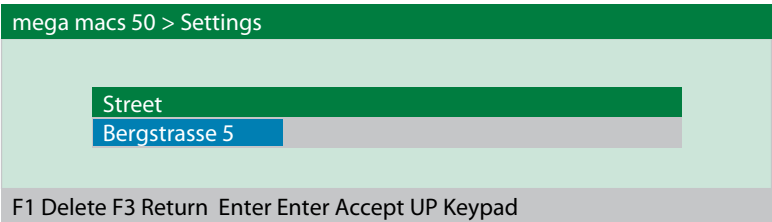
Input of the company address which will be printed on the report of the diagnosis folder.
Procedure:



1. Select and confirm > Company data < .  

Company data	
Name 1	Autohaus
Name 2	Mustermann
Street	Bergstrasse 5
POSTCODE	79XXX
Town	Somewhere

2. Select and confirm address box.  



NOTE

Hihghlighted in blue	This entry is marked. Cancel the marking with  key
Mark	with   keys.
F1	Deletes the marked entry.
F3	Deletes all entries to the left of the mark.
Enter	Accepts all the entries in that field.
UP	Corresponds to the  key. The virtual keypad is opened, marked entries are deleted.

4. Open the virtual keypad. 

ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
 1234567890 ., - + / % & < > () ; :
 _ ä Ä ö Ö ü ß

Street

Bergstrasse 5

Using the keypad

Select character	  
Accept character	
Space	Underscore before the umlauts in the bottom line

4. End input. 

5. Accept address box. 

Info message

Accept settings conclusively?
 ENTER (Yes) ESC (No)

6. Confirm message accordingly.

7. Enter inputs into the other address boxes as described above.

8. Return to main menu with 2 x 

The inputs are stored and can be printed out on the diagnosis folder report.

Settings > Version <

All the information required to identify mega macs 50 is stored here.

Versions			
Overview			
Software	1.40.xx		Program
Data	32.05.xxx		Data version
Design	1.4 (31.xxx)		Circuit
Hardware	1.xx		Housing
Device No.	12xx		Customer assignment
Serial No.	12xx		Production assignment

In the event of a fault, these data will be required by Hella Gutmann Solutions.

CAUTION

It is not possible to update mega macs 50 without the device number.

Settings > Update <

Hella Gutmann Solutions makes an update for mega macs 50 available to the customer twice a year. These updates are subject to a charge. They cover not only new vehicle systems, but also technical modifications and improvements. We recommend keeping your mega macs 50 up to date through regular updating.

Requirements

- Web compatible PC
- A cleared partner licence A or B from Gutmann Messtechnik
- > Gutmann Portal < programme installed on the PC
- Free USB interface on the PC
- Power supply from mega macs 50 via power supply unit

NOTE

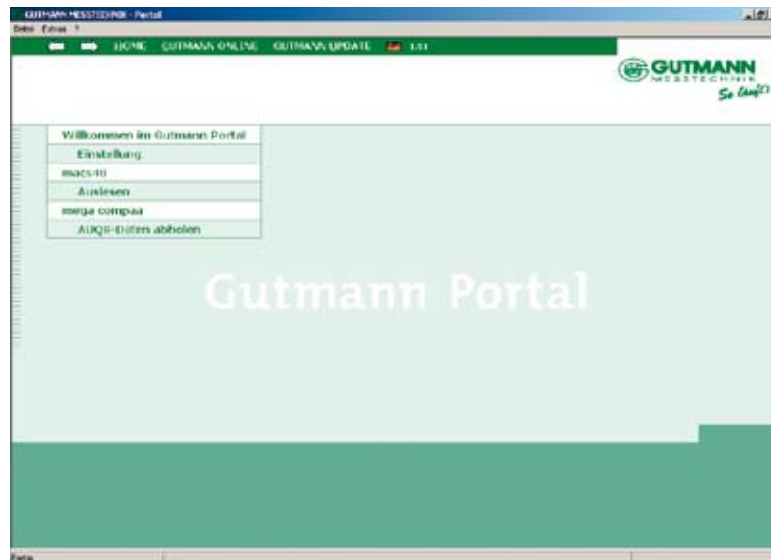
Data transmission can be made with a USB cable or with Gutmann > air macs <.

CAUTION

Depending on the type of transmission, the corresponding settings must be done in mega macs 50 and in the > Gutmann Portal < programme on the PC.

Steps applicable to the PC:

1. Start the internet browser on the PC.
2. Start the > Gutmann Portal < on the PC.



3. Select > Gutmann Update < in the header and confirm.

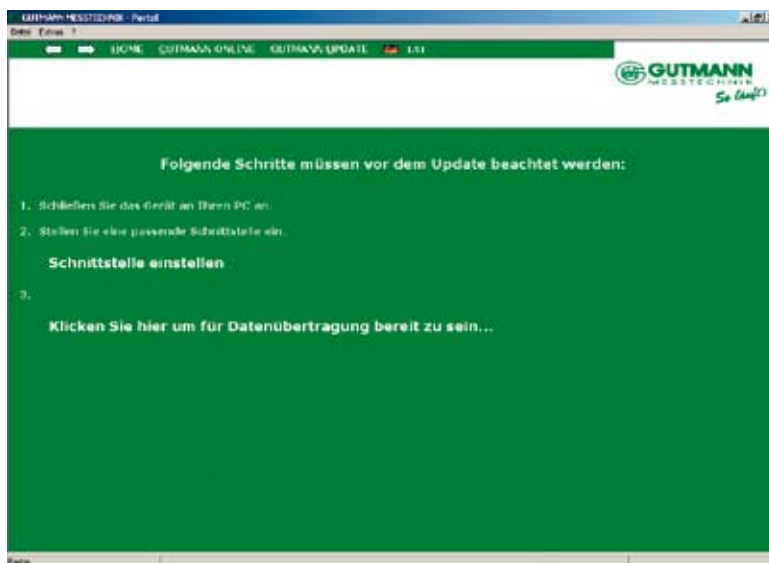


CAUTION

Determine the desired interface in the > Settings < menu.



4. Select and confirm > mega macs 50 <.



5. Confirm message > Click here to ... <.



The PC is set up for data transmission.

Procedure applicable to mega macs 50

1. Connect mega macs 50 to a 220 V socket by way of the power supply unit.

CAUTION

During an update, mega macs 50 must be supplied with power through the power supply unit and must not be disconnected from the power source during the update.

2. Switch on mega macs 50 and call up the > Settings < > Update < menu

Update
Update
System check

3. > Update < 

Data transfer ..., data check	
Action	:Start with ENTER
Interface	:USB
File name	:xxxxx
File size	:123563
File bytes	:23456
Update size	:1257693576
Total files	:245
Faulty files	:xxx

4. Start the update. 

5. > Update successfully completed < is displayed at the end of the update.

Action	Update successfully completed
Interface	USB
File name	xxxx
File size	
File bytes	
Update size	
Total files	
Faulty files	0

6. Switch off mega macs 50.

CAUTION

In every case disconnect mega macs 50 from external power supply, power supply unit or diagnostic plug.

All the new data will be available when mega macs 50 is started next time.

Fault messages after the update

Procedure:

1. Select and confirm > Update < in the > Settings < menu.

Update
Update
System check
System update

2. Select and confirm > System check <.  

3. The system check will be carried out automatically and the table below displayed on completion.

Action	Update successfully completed
Interface	USB
File name	xxxx
File size	
File bytes	
Update size	
Total files	
Faulty files	1
A:\DADLxx.DEF	

4. Return with 

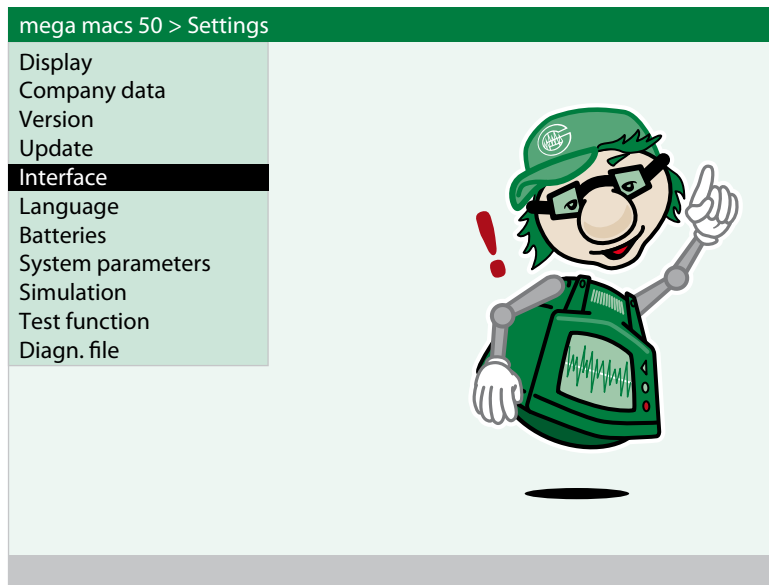
If the >Faulty files< entry is greater than 0, update the system with the >System update< menu.
Follow the instructions on the screen.

Info message
System files successfully updated.
On restarting, the files will be active.

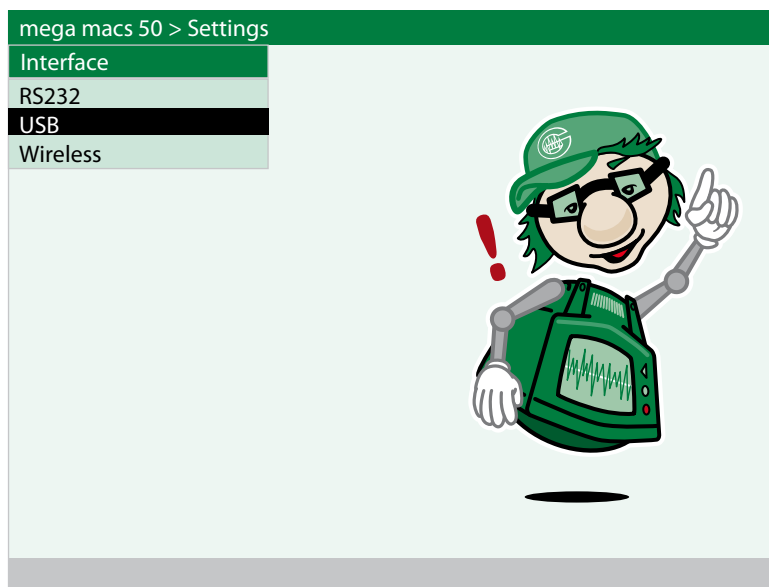
Return with 

Settings >Interface<

The interfaces required for communication with a PC are determined and set in this menu.



1. Select and confirm > Interface <.  



2. Select and confirm > RS232, USB or Wireless <.  

NOTE

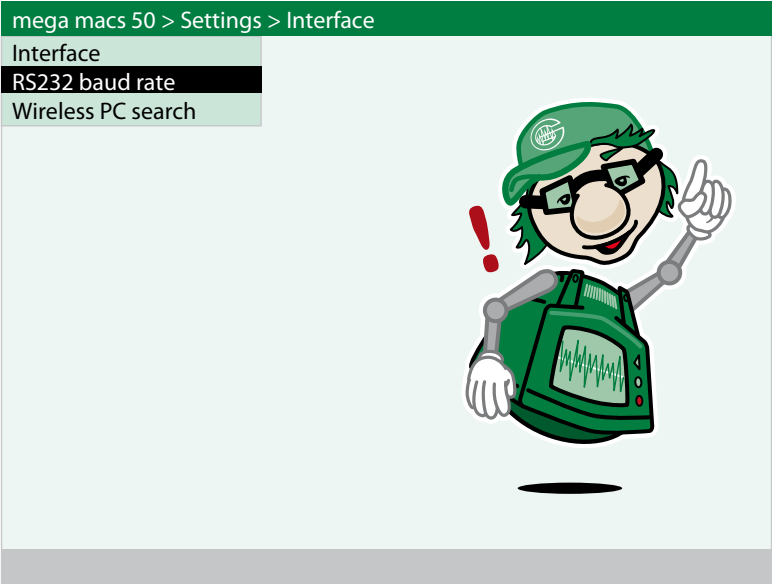
The fastest and most reliable interface is USB.

CAUTION

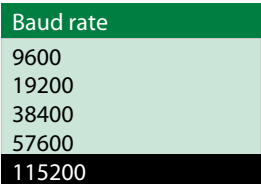
If RS232 is selected, the baud rate must be set. The baud rates of mega macs 50 and PC must be the same. If Wireless is selected, > air macs base < must be connected to the PC.

Set RS232 baud rate

Procedure:



1. Select and confirm > RS232 baud rate <.  



2. Select and confirm the baud rate.  

3. Return with 

CAUTION

The baud rates of PC and mega macs 50 must be the same.

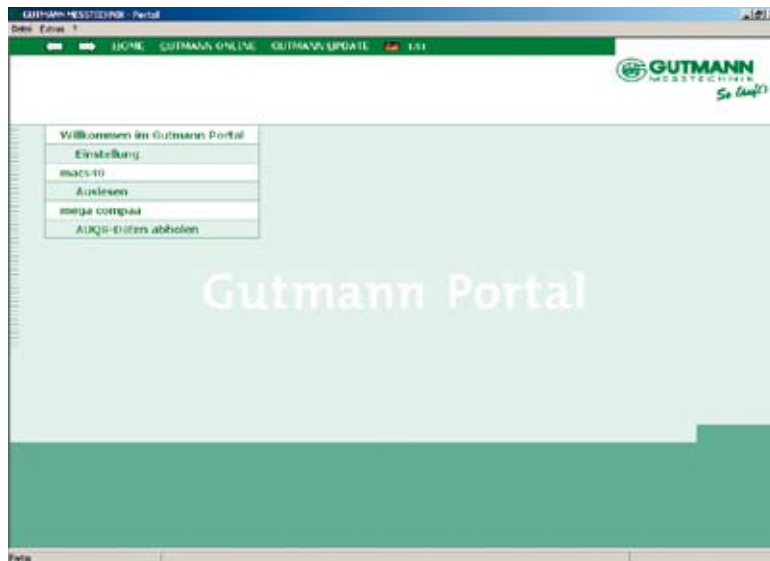
Wireless PC search

NOTE

The connection can be sought in this menu to verify a secure connection via Wireless.

Procedure applicable to the PC

1. Connect > air macs base < to the PC.
2. Start > Gutmann Portal < on the PC.



3. Select and confirm > Settings <.  

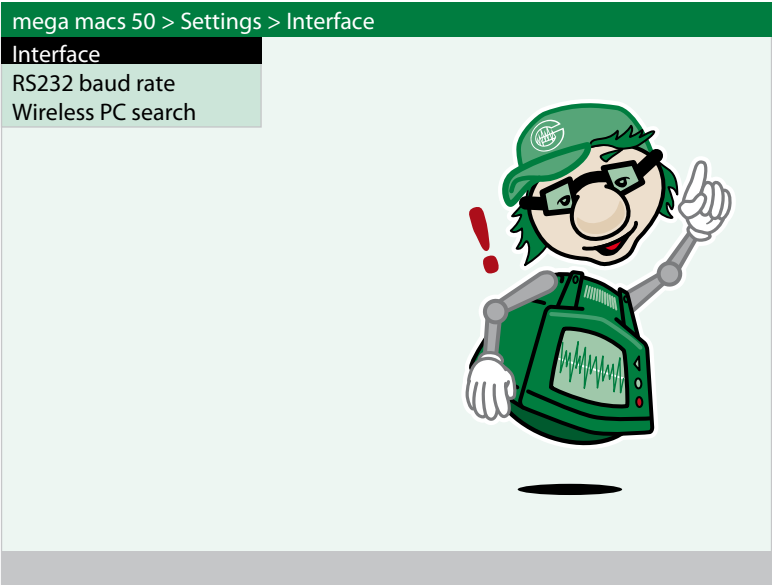


4. Select and confirm > Change <.  

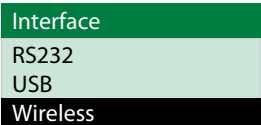


5. Select and confirm > Wireless <.  
6. Return with 

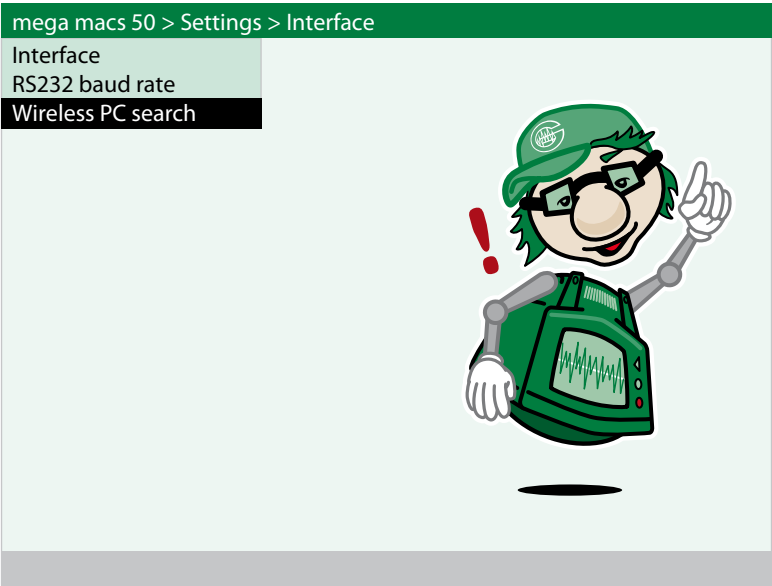
Procedure applicable to mega macs 50



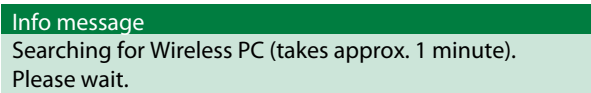
1. Select and confirm > Interface <.  



2. Select and confirm > Wireless <.  



3. Select and confirm > Wireless PC search <.  



This message appears after a short time:

Info message

Wireless PC found and established as reciprocal.

4. Confirm message. 

The data transmission via Wireless is set up.

Fault message

Info message

No device with Wireless found.

5. Check connection and installation of > air macs base < on the PC.

Settings > Language <

Selection of the desired language for mega macs 50.

NOTE

Multiple languages on the device are an optional feature.

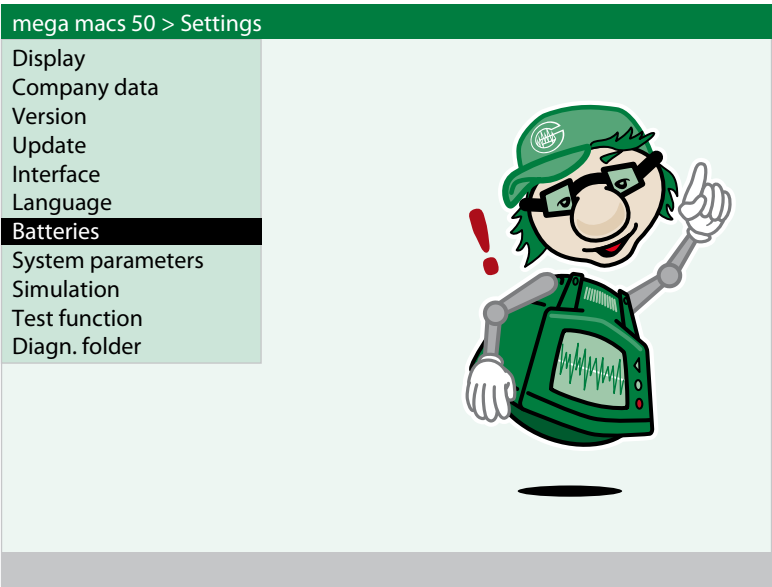
Appropriate information can be obtained from Gutmann Messtechnik.

Settings > Batteries <

The nominal capacity of the installed batteries is set in the > Batteries < menu. The set value affects the charging process and the display showing the state of charge of the battery. A value of 1500 mAh is set ex works.

CAUTION

Incorrect inputs will lead to faulty charging processes which will affect the operating reliability of mega macs 50.



1. Select and confirm > Batteries <.  

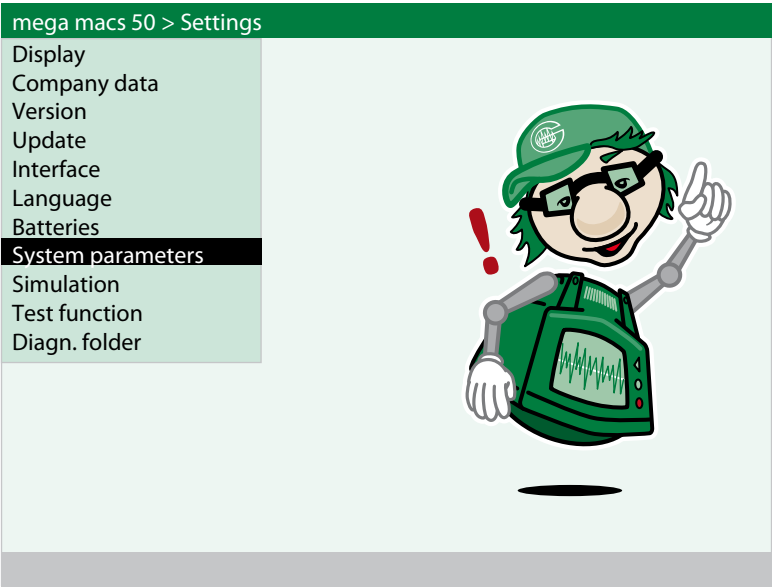
Battery capacity (mAh)

1500

2. Put in the values via the virtual keypad (see section D2).

Settings >System parameters<

Voltage- and current data are stored in the > System parameters < menu which are required for the reliable operation of mega macs 50. In the event of a fault, a corresponding diagnosis of the possible fault can be obtained relating to these values.



1. Select and confirm > System parameters <. 

System parameters		
Battery state of charge	45	%
Battery current	731.98	mA
Battery voltage	11.54	V
OBD voltage	13.80	V
Power supply unit voltage	15.32	V
UPOW voltage	14.53	V
Voltage + 17 V	16.90	V
Voltage + 3.3 V	3.38	V
ST2 voltage	2.37	V

< 15%: connect charger
Pos. value = charging current, neg. value = discharge current
Nominal value 9 – 12 V
Voltage at PIN 16 of the diagnostic plug
Charging voltage of power supply unit
Auxiliary voltage for communication
Auxiliary voltage for communication
Supply voltage for electronics
Internal auxiliary voltage

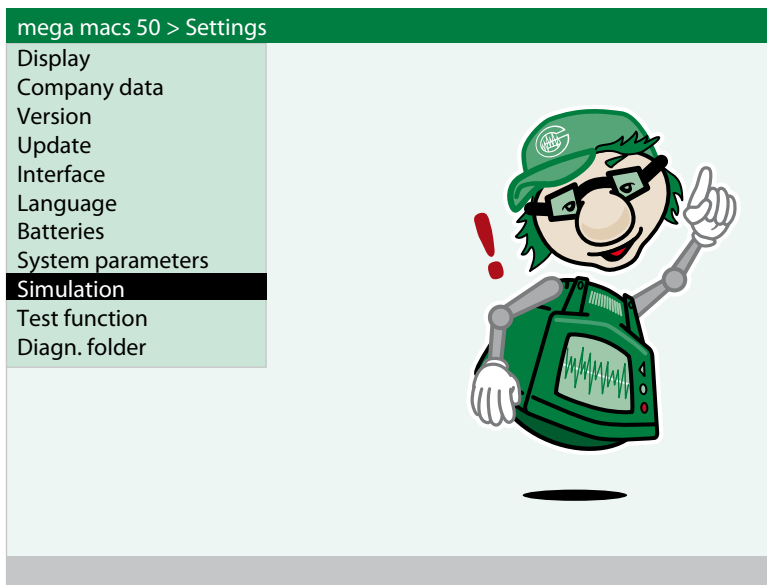
2. Return with 

Settings > Simulation <

A program can be called up in the > Simulation < menu, with which the user can practise the use of mega macs 50. The simulation facility applies to the use of > Reading/deleting fault codes < and > Parameters <.

CAUTION

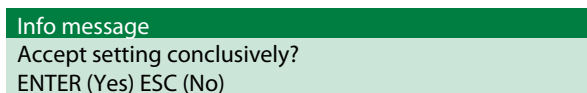
If a vehicle is connected when the simulation function is active, no communication will be established with the selected system. The displayed values will be incorrect. The simulation function will no longer be active when mega macs 50 is started next time.



1. Select and confirm > Simulation <.  



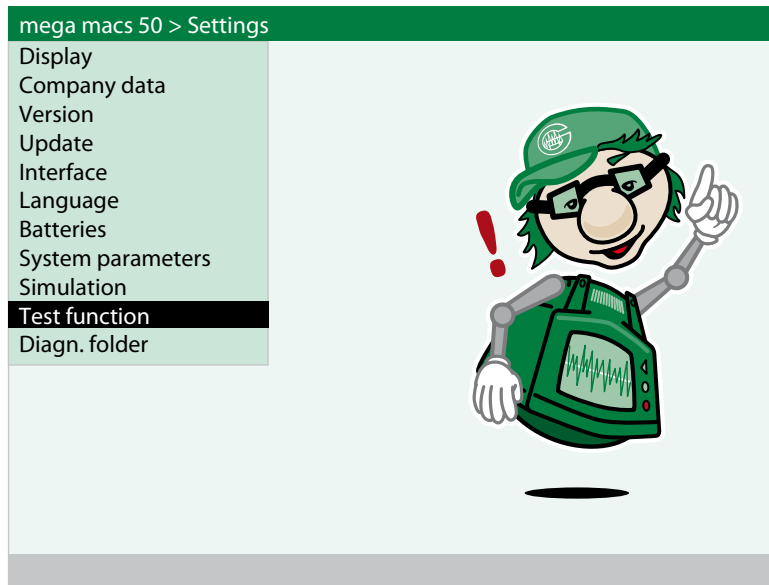
2. Select and confirm function.  



3. Confirm the message accordingly.

Settings > Test function <

If no communication with the vehicle system is established, the function of the diagnostic plug can be checked with this program.



Procedure:

Connect the power supply unit to mega macs 50.

1. Select and confirm > Test function <. 
2. Connect ST2 cable to mega macs 50.
3. Continue with 

The following messages may be displayed:

Info message	
A fault has occurred	
Line:	A
Range:	1
Number:	1
Nominal level	1
Actual level	0

The diagnostic plug, connecting cable or mega macs 50 is defective,
or

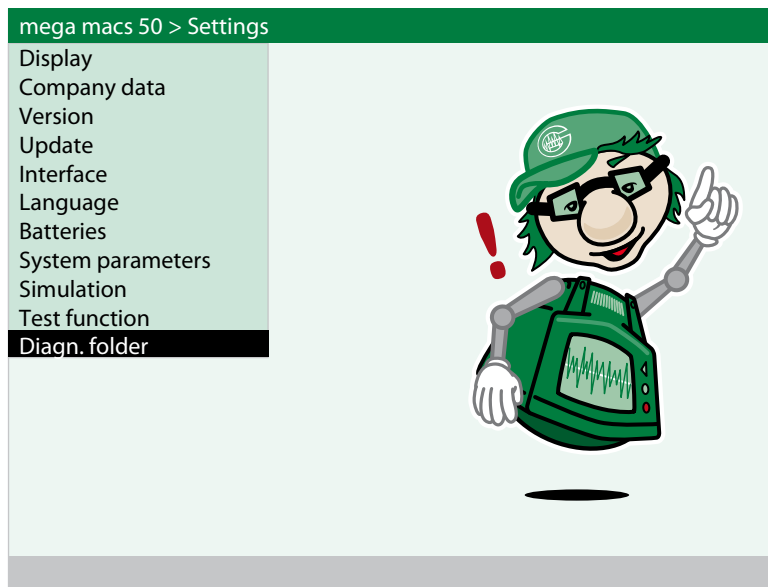
Info message	
Test successfully completed	

mega macs 50 is OK.

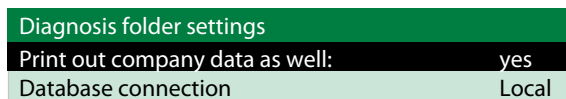
The diagnostic socket in the vehicle is defective, e.g. no voltage at pin 16 or poor earth at pin 4

Settings > Diagn. folder <

The settings with which the diagnosis folder can be configured are stored in the > Diagn. folder < menu.



1. Select and confirm > Diagn. folder <.  



2. Select and confirm box.  

3. Select and confirm setting.  

4. Return with 

DIAGNOSIS

Diagnosis > Control unit communications <

Control unit communication enables data exchange with the system to be tested by using a diagnostic device. Communication is required for the following functions:

- Reading out/clearing fault memory
- Displaying parameters
- Carrying out actuator test
- Installing basic settings
- Carrying out coding of control units
- Carrying out service reset

CAUTION

Faultless communication is possible only when:

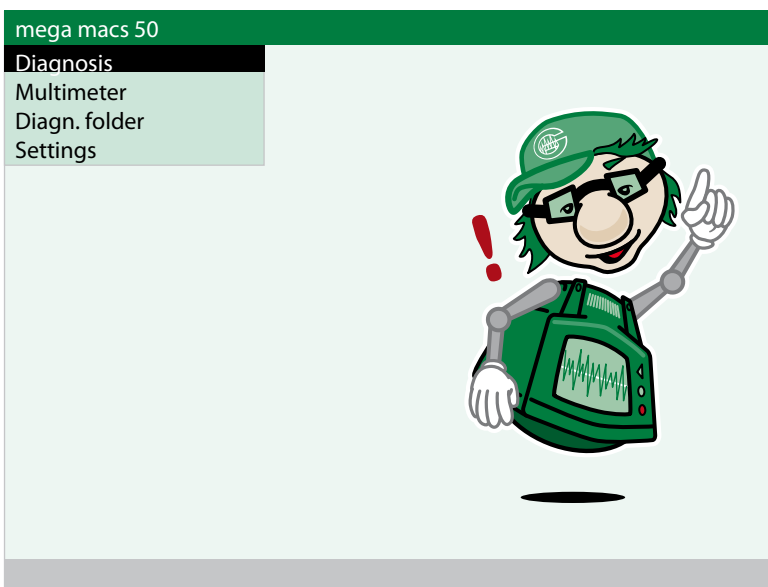
- all the pins are correctly assigned at the diagnostic socket
- the vehicle has been correctly identified
- Identify the vehicle as precisely as possible by reference to the search mask
- the voltage of the vehicle's electrical system is not lower than 11.5 V; if necessary, use external power supply
- all power consumers are off
- the diagnostic plug is connected to the vehicle
- external accessories, radio, CD changer etc. are correctly connected
- the ignition is turned on

NOTE

Always turn off the ignition before connecting or disconnecting the diagnostic plug to/from the vehicle! If you wish to read out several fault memories one after the other one vehicle, turn off ignition after every readout procedure and turn on again for the next procedure.

Procedure:

1. Switch on mega macs 50 with ☐ ON/OFF



2. Select and confirm > Diagnosis <. 

mega macs 50 > Diagnosis

Alfa
Audi
BMW
Chrysler
Citroen
Daewoo
.....
.....
.....
Peugeot

3. Select and confirm > Manufacturer <. 

mega macs 50 > Diagnosis > Peugeot

Petrol
Diesel

4. Select and confirm > Fuel <. 

mega macs 50 > Diagnosis > Peugeot

104
106
206
207
306
307

F1 Put in licence plate number.

NOTE

F1

Put in licence plate number.
To identify the vehicle in the diagnosis folder, put in the licence plate number via the virtual keypad (see section D2).

5. Select and confirm > Vehicle Group <. 

mega macs 50 > Diagnosis > Peugeot > Diesel > 306		
306 1.9 D	WJY (DW8)	00-01
3061.9 D	DJZ (XUD9Y	00-01
306 2.0 D HDI	RHY (DW10TD)	99-01
xxxxx	xxxxx	xxxxxx
xxxxx	xxxxxx	xxxxxx
Model	306 2.0 D HDI	
Engine code	RHY (DW10TD)	
Model year	99-01	
Rated output	66 kW	
Displacement	1997 cc	
Type key number	884	
Gutmann number	756	

F3 search

NOTE

A bright information window will appear for about 15 seconds giving data relating to the marked vehicle. F3 Search opens a window with search criteria by which the vehicle can be identified.

Press >F3<.

Model
Engine code
Model year
Rated output
Type key number
Diagn. programme

NOTE

Re: > Type key number <

The first three digits in box 2.2 of the vehicle registration document, part 2 (for Germany only).

NOTE

Re: > Diagnostic programme <

Possible types of diagnosis for the selected vehicle are displayed.

6. Search criterion, in this case engine code



Header	
DHY	
RHY	
WJY	

7. Select and confirm the engine code.



mega macs 50 > Diagnosis > Peugeot > Diesel > 306		
306 2.0 D HDI	RHY (DW10TD)	99-01
306 2.0 D HDI	RHY (DW10TD)	99-01
306 2.0 D HDI	RHY (DW10TD)	99-01
F1 Info F3 Search		

8. Select and confirm vehicle type

... > Peugeot > Diesel > 306 > 306 2.0 TD HDI/RHY (DW10TD)	
Fault code	
Parameters	
Actuator	
Service reset	
Basic setting	
F3 Connection	

9. Select and confirm type of diagnosis.

... > Diesel > 306 > 306 2.0 TD HDI/RHY (DW10TD) > Fault code	
Motor	
ABS	
Airbag	
F3 Connection	

NOTE

F3 Connection Diagnostic socket position

10. Select and confirm system.

11. Connect diagnostic plug.

12. Turn on ignition.

13. Continue with

> 306 > 306 2.0 TD HDI/RHY (DW10TD) > Fault code > Engine	
EDC15c2 (B)	
F1 Info F2 Info	

NOTE

F1 Info Information about the selected system.

F2 Menu Information about communication parameters. In the event of a complaint, Hella Gutmann Solutions uses this information for fault identification and rectification. Leave information with ESC.

CAUTION

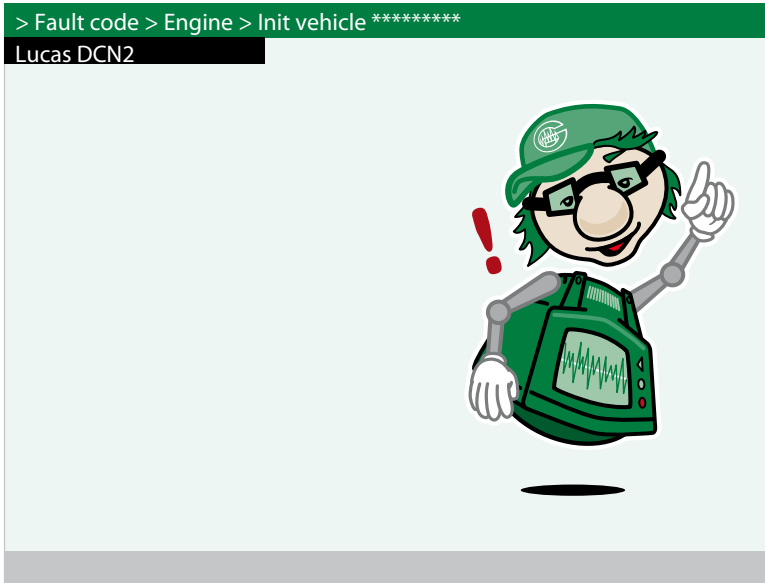
Changes to the data can lead to malfunctions.

14. Continue with

CAUTION

Follow the instructions on the screen without fail.

15. Continue with 



Communication with the control unit is established.

For further information, refer to the sections on types of diagnosis.

Diagnosis > Reading/deleting fault code <

If, during the internal check, the control unit identifies a component function as faulty, a fault code will be set in the memory and the corresponding warning lamp activated. Mega macs 50 delivers the fault code in plain text. In addition, information as to the possible effects and causes of the fault code is stored. If tests are required as to possible causes, a connection can be made to the multimeter.

1. Connect mega macs 50 as described in section E to establish communication..

> 306 > 306 2.0TD HDI > Fault code > Engine
Number of faults: 3
Fault code: 832 CAMSHAFT SENSOR
Fault code: 560 PRIMARY CIRCUIT, FUEL PUMP
Fault code: 545 ACCELERATOR PEDAL SENSOR 2
F1 System info F3 Delete ENTER Details

2. Select and confirm > Fault code <.  

NOTE

F1 System info	Information on the installed system if supported by the manufacturer.
Delete F3	All displayed fault codes will be deleted.
ENTER details	Information about the marked fault will be displayed.

> 306 > 306 2.0TD HDI > Fault code > Engine
Fault code 832
FAULTY CAMSHAFT SENSOR FAULTY SIGNAL
FUNCTION: The sensor detects the camshaft position; the ignition and injection systems are synchronised and/or the position of the variable camshaft control detected via the signal.
EFFECT: Poor starting behaviour, etc.
CAUSE: >>> Circuit interruption/short circuit
F3 Delete fault F3 Menu

All the information can be displayed by scrolling. 

Connection to the multimeter

Example:

>>> Circuit interruption/short circuit

1. Select and confirm.  

Voltage

Resistance

Current

Voltage/Voltage

Voltage/Current

Temperature

Comp. measurement

For instructions on using the multimeter, see section M.

2. Return to the desired menu option with 

Diagnosis > Parameters <

Since the causes of faults can be interpreted differently by the control unit, it is often not sufficient to read out only the fault memory.

In many cases, either fault codes are not entered or it is not possible to obtain an unequivocal statement about the defective component from the fault text.

Example 1:

The engine temperature may vary within a range of -30°C to +120°C.

If the sensor signals +9.0°C, although the actual temperature in the engine is +80°C, the control unit will determine an incorrect injection time.

No fault code will be set, as this temperature is logical for the control unit.

Example 2

Fault text: Lambda probe signal faulty

In both cases, a diagnosis can only be carried out if the corresponding parameters are read out.

mega mac 50 reads the parameters out and presents them in plain text.

If up to 4 parameters are selected, they will also be displayed in graphic form.

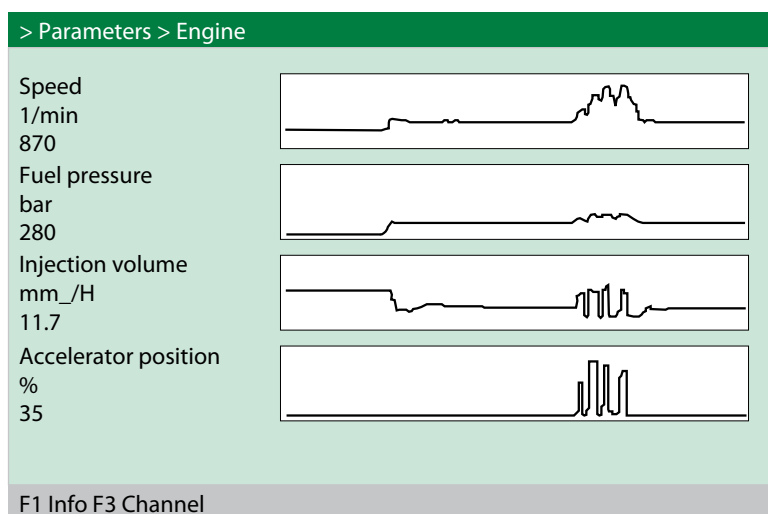
A maximum of 8 parameters can be called up, but in this case they will not be presented in graphic form.

A task-orientated selection of the parameters facilitates fault diagnosis.

Information on the parameters is stored.

Procedure

1. Connect mega macs 50 to establish communication as described in section E.



NOTE

F1 Info Information about the selected parameter is displayed.

Info Channel
Speed
Fuel pressure
Injection quantity
Accelerator position

2. Select and confirm > Parameters <.  

Info Parameters	
Accelerator position	
An accelerator pedal potentiometer signals to the control unit ...	
Display	Explanation
%	Values in per cent

NOTE

F3 Channel Selection window with all the parameter groups.
Hella Gutmann Solutions has prepared a preliminary selection for certain diagnostic tasks.
By selecting one group, you can call up the parameters required for the diagnosis.

Group selection
All parameters
Basic function
Engine Start
xxxxxx

3. Select and confirm > Group <.  

Channel selection
☐ 1 Speed B1 1/min
☐ 3 TV - angle B2 °
☐ 5 Air mass B2
☐ 6 Coolant temp. B3 °C
☐ 8 Lambda vltg. B7 mV
F1 Help F2 Deselect F3 Nominal values

Procedure:

- >F2< deselects all the parameters marked *.
- Mark parameters. 
- Deselect or select parameters with 
- Renewed establishment of communications 

NOTE

If more than eight parameters are selected, observe the info message.

Info message
- Parameters are not presented in graphic form.
- The measured values will not be stored in the diagn. folder.

NOTE
F3 Nominal values

Nominal values for the parameters can be called up depending on manufacturer.

Channel selection			
☒	1	Speed	rpm
☐	3	O2 Integrator	°
☐	5	Air flow meter	
☐	6	Coolant temp.	°C
☐	8	Lambda vltg.	mV
F1 Help F2 Deselect F3 Nominal values			

Procedure:

1. Mark parameter, in this case speed. 
2. Press >F3<.

Speed
Vehicle-specific data
Engine at operating temperature, idling 710 - 890 1/min
Possible faults:
- Idle actuator or TV actuator faulty
- xxxxxx

3. Return with 

Diagnosis > Actuator <

Components in electronic systems are activated with the > Actuator < menu. Therefore it is possible to check the basic functions and cable connections of these components.

DANGER

To prevent damage to the system, the instructions shown on the screen must be followed without fail.

Establish identification and communications as described in section E

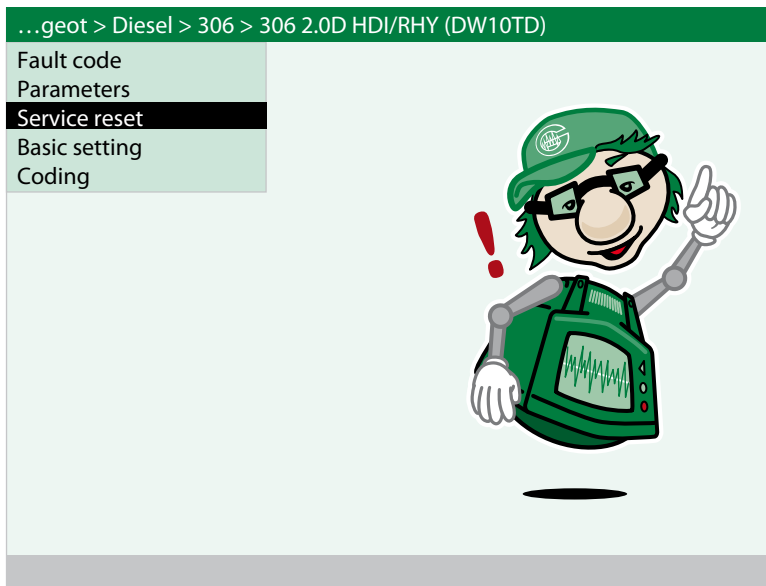
NOTE

The course of the actuator test is automated by many manufacturers and is determined by the control unit.

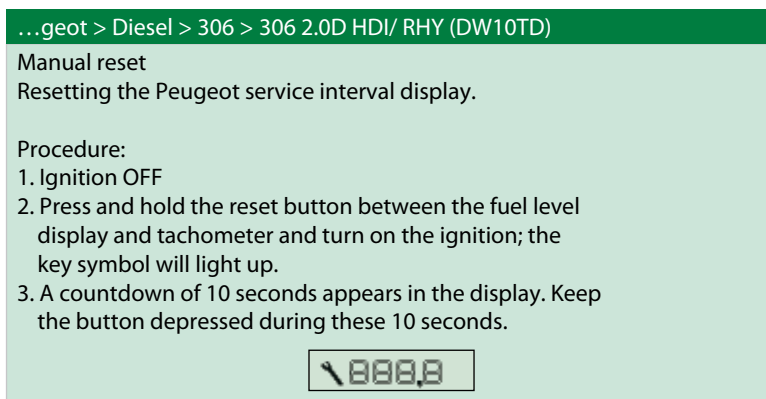
Diagnosis > Service reset <

Depending on the make of vehicle, the service intervals are reset in the > Service reset < menu. Either a description is given as to how the manual reset is to be carried out, or the automatic reset is carried out by mega macs 50. The identification and the establishment of communications correspond to section E.

Manual reset



1. Select and confirm > Service reset <. 



2. Further information can be obtained by scrolling 

Automatic reset

The identification and establishment of communication corresponds to section E.

... > Diagnosis > Volkswagen > Benzin > Golf42.0i/AQY
Resetting service interval
Oil change
Inspection 1
Inspection 2
F3 Reset

1. Select and confirm interval.  
2. Press F3.
3. The resetting process will be carried out after communications have been established.

CAUTION

Follow the instructions on the screen without fail.

Diagnosis > Basic settings <

The data relating to components which, e.g. have been replaced, are adjusted or adapted in accordance with the manufacturer’s specification in the > Basic settings < menu. The identification of the vehicle and establishment of communication correspond to section E.

CAUTION

Clear the fault memory before carrying out any basic settings.

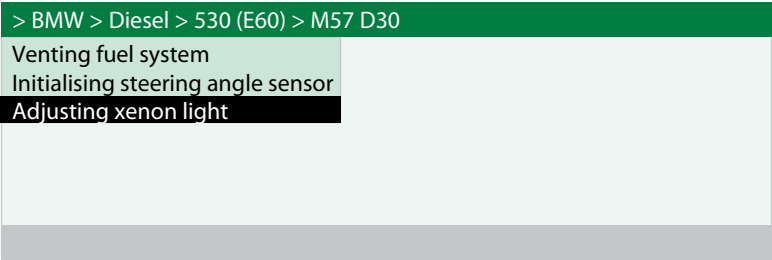
Ensure certain conditions (depending on the manufacturer) in order to carry out the basic setting.

Observe the instructions in mega macs 50 without fail.

DANGER

Incorrect basic settings can lead to major malfunctions.

Procedure:



1. Select and confirm > System <.  
2. Follow the instructions on the screen.

Diagnosis > Coding <

The coding of control units and components is carried out in the > Coding < menu.

Codings are required when components were replaced or if additional functions must be activated in an electronic system.

The vehicle identification and the establishment of communication correspond to section E.

Procedure

> BMW > Diesel > 530 (E60) > M57 D30	
Engine control units	
ABS	
CAN gateway	
Automatic air conditioning	
Transport mode	
F1 Help	

NOTE

F1 Information on the system and help in carrying out the coding

Help message

In the transport mode, the control units go into an inactive mode in order to save the battery.

The vehicle is released for normal on-road use by the coding.

1. Select and confirm > System <.  

2. Follow the instructions on the screen without fail.

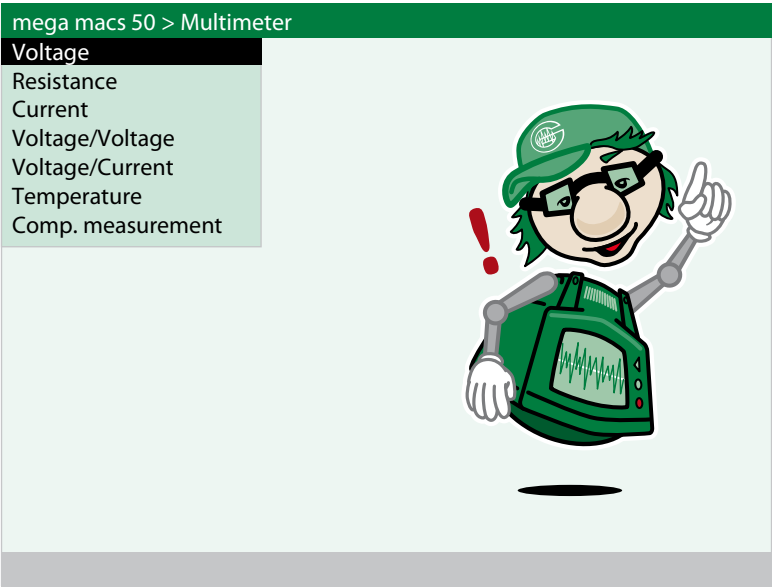
MULTIMETER

The purpose of mega macs 50 multimeter is to measure voltage, resistance, current and temperatures of vehicle components.
The measuring parameters for various components are preset in the > Comp. measurement < menu.

Measuring ranges		
Voltage/time:	0 — 200 V	0 s — 100 s
Resistance/time:	0 — 1000 kOhm	0 s — 100 s
Current/time:	0 — 400 A	0 s — 100 s
Temperature:	- 30 — + 550 °C	

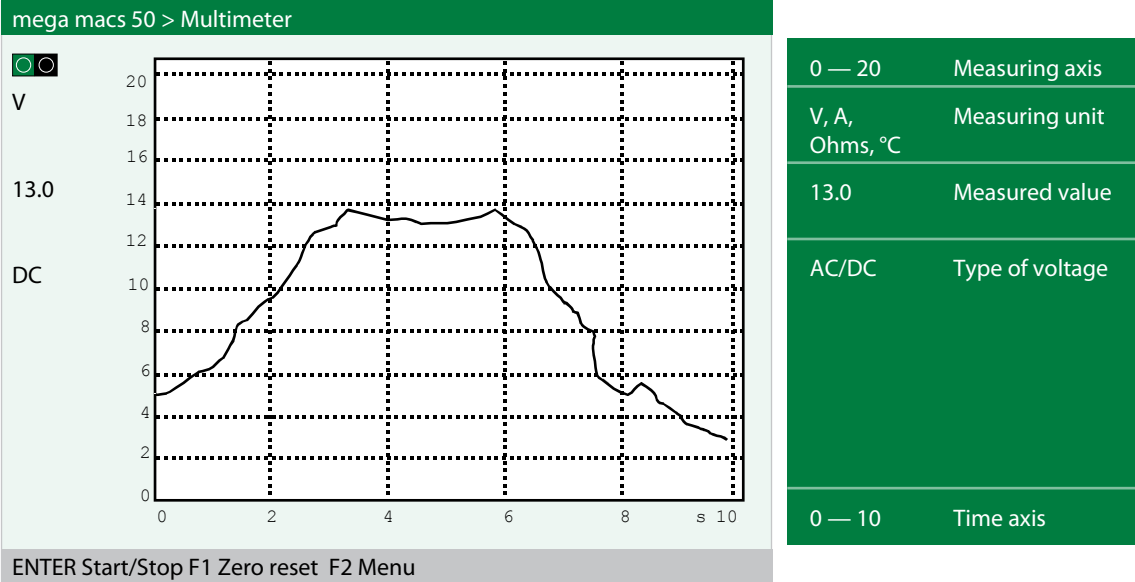
CAUTION
Reset the measured value with F1 before every measurement.
The current clamps take account of the technical current direction and are therefore marked with an arrow which must be aligned in accordance with the intended task.

DANGER
Testing and safety regulations must be observed when carrying out any measurements.
Carry out resistance measurements only on de-energised components.



1. Select and confirm > Measuring mode <.  

General settings



CAUTION



 Use the green/black connecting socket.

Change the measuring axis with 

Change the time axis with  

NOTE	
ENTER Start/Stop	The current display will be saved — snapshot function. To continue measurement, press ENTER again.
F1 Zero reset	The measured value will be reset.
F2 Menu	Setting of zero line, trigger level, trigger setting and type of voltage. The setting functions will be shown in the footer.

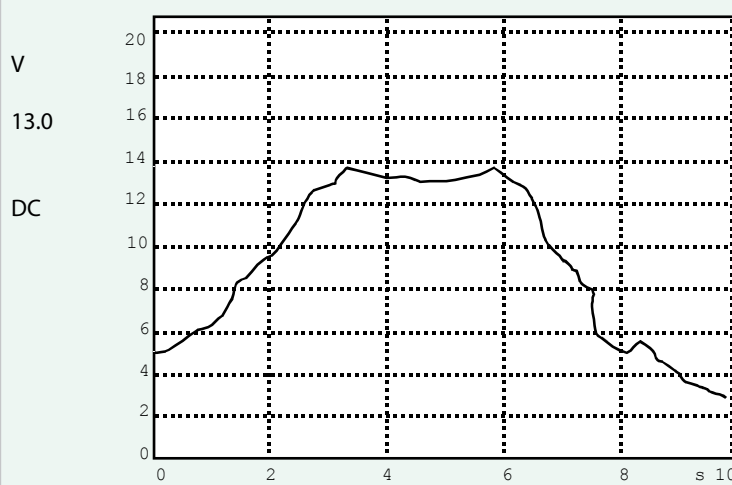
Settings under F2

Zero line

Zero line
 AC/DC
 Start/Stop
 Zero reset

1. Select and confirm > Zero line <.  

mega macs 50 > Multimeter > Voltage



UP zero line + DOWN zero line -

Raise zero line. 

Lower zero line. 

NOTE

If no cursor key is pressed within 5 seconds, the setting function will be discontinued and the standard display in the footer will be called up.

Type of voltage

Zero line
AC/DC
Start/Stop
Zero reset

1. Select and confirm > AC/DC <.  

NOTE

AC If AC is selected, only the AC voltage values of a signal will be displayed, e.g. the harmonics of the generator.

DC If DC is selected, all the voltage values of a signal are displayed, e.g. battery, throttle valve potentiometer etc.

Connection
Channel 1. DC

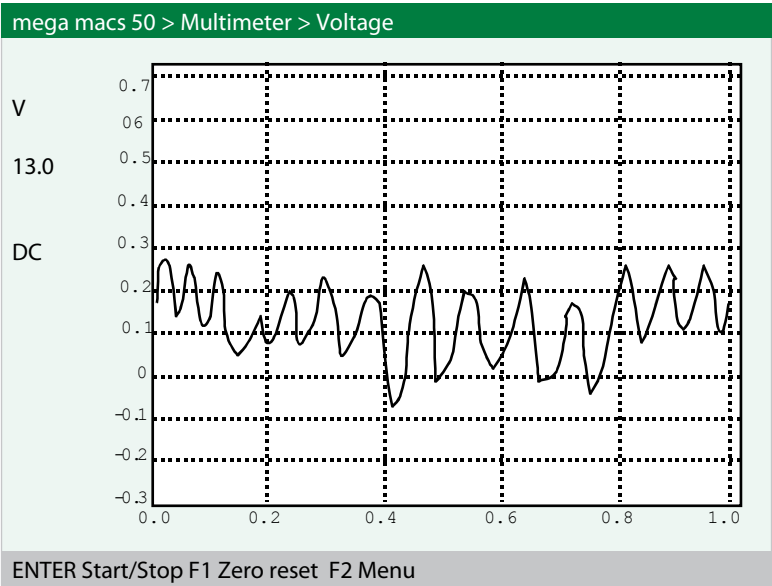
2. Confirm > Channel 1: xx <. 

Connection
DC
AC

3. Select and confirm > AC <.  

Connection
Channel 1. AC

Return with 



NOTE

Set the measuring range and zero line according to the signal.

Trigger

NOTE

If the time axis is set at less than 1.0 s, the trigger can be selected. A trigger is required to display a voltage curve. The trigger releases a new image as soon as the signal reaches a defined voltage.

After startup, mega macs 50 is always set to automatic triggering. In order to stabilise high-speed signals, it is often necessary to change the trigger point. The required settings can be accessed under F2.

Zero line

AC/DC

Start/stop

Zero reset

1. Select and confirm > Trigger <.  

Trigger edge

NOTE

> Positive edge <

> Negative edge <

Trigger orientation towards rising voltages.

Trigger orientation towards falling voltages.

Any change in the edge will displace the image towards the right or left.

Trigger settings

Edge: Positive

Mode: Auto

2. Select and confirm > Edge xx <.  

Trigger edge

positive

negative

3. Select and confirm > positive < or > negative <.  

Accept setting with 

Trigger mode

NOTE

mega macs 50 is set to automatic triggering after startup. If the presentation of a signal is unclear or is particularly irregular, mega macs 50 can be set to manual triggering.

Trigger settings

Edge: positive

Mode: Auto

1. Select and confirm > Mode xx <.  

Trigger mode

Auto

Manual

2. Select and confirm > Auto < or > manual <.  
3. Accept setting with 

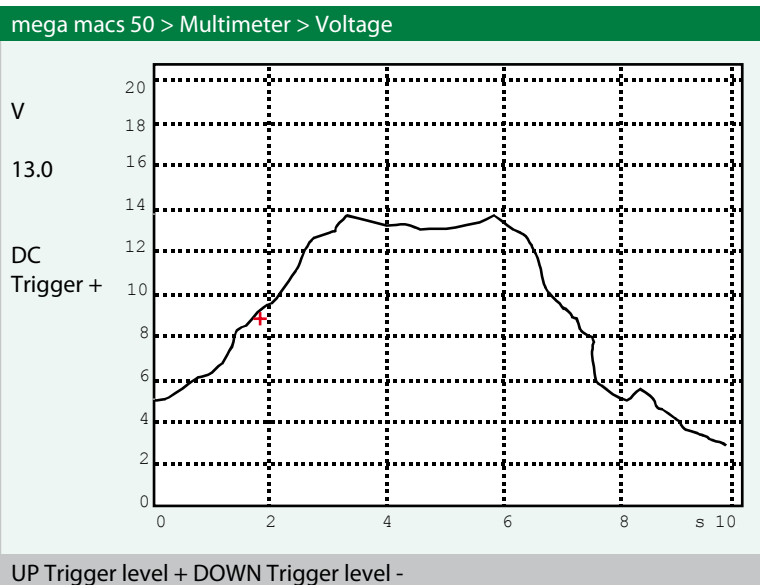
Trigger level

NOTE

In the > Manual < trigger mode, the trigger level can be shifted in order to achieve the optimum stabilisation of a signal curve.

Zero line
Trigger level
Trigger
AC/DC
Start/stop
Zero reset

1. Select and confirm > Trigger level <.  



The trigger level is represented by a red cross.

Raise trigger level. 

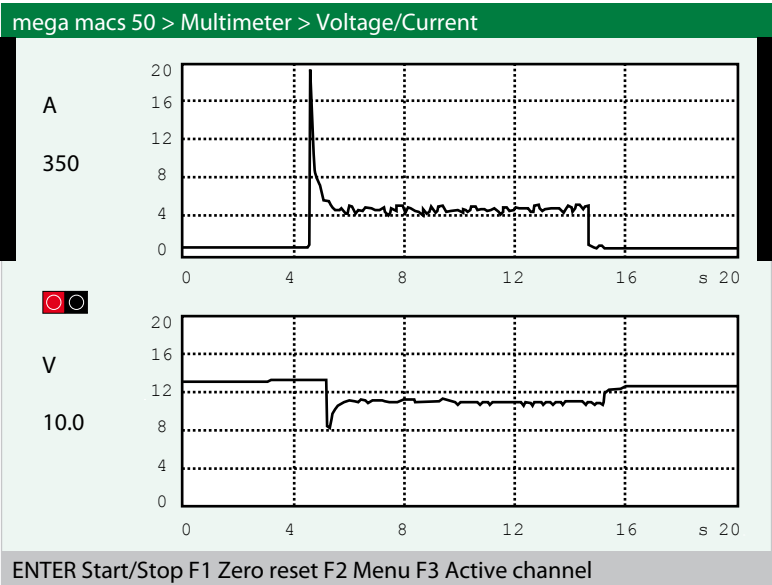
Lower trigger level. 

CAUTION

After leaving the program, the device is reset to the standard settings.

Two-channel multimeter

The two-channel multimeter permits comparative measurements of components. The settings and operation are as described previously.



CAUTION
 48 Use the red/black connecting socket.

NOTE
F3 Active channel

Black bars on the right and left indicate the active channel. Settings can only be made here. For the procedure, see above.

Temperature

This measurement permits diagnoses which are causally related to temperature movements.

CAUTION

Special accessory: Gutmann infrared thermometer, ref. No. 301038, required

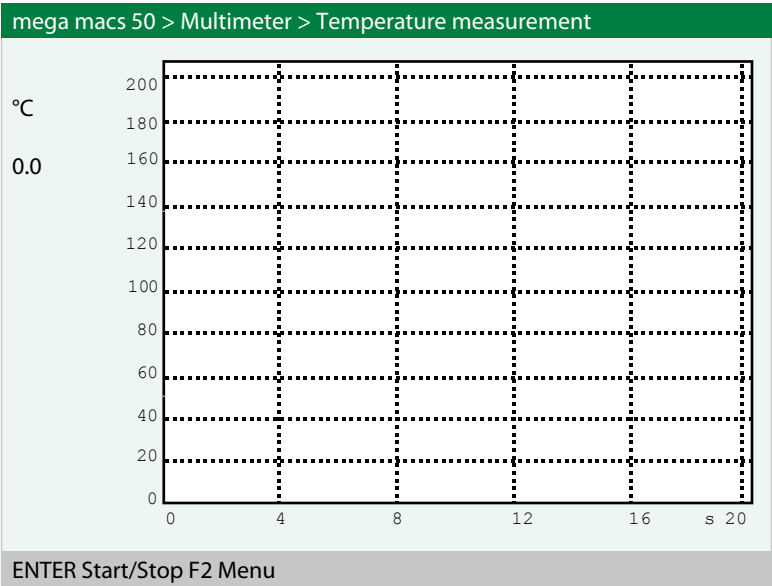
Examples:

Applications	Components	Diagnosis	Range up to °C
Lubrication system	Oil pan	Engine temp.	150
Cooling system	Radiator/thermostat	Flow rate	120
Ignition	Single coils	Deviation	120
Exhaust system	Manifold	Mixture/misfire	500
	Catalyst	Effect	500
Air conditioning	Condenser	Flow rate	40
Air conditioning, autom.	Sensors	NOMINAL/ACTUAL	40
Heating	Heat exchanger	Flow rate	120
Rear window	Heating	Wires	70
Drive train	Bearings/bushes	Wear	120
Brakes	Discs/drums	Effect	500
Tyres	Tread	Steering geometry setting	80

CAUTION

Before it is used for the first time, mega macs 50 must be calibrated to the IR thermometer.

Calibration



1. Press >F2< .

Zero line
 Temperature reset
 Start/Stop

2. Select >Temperature reset< and confirm.  

3. Follow the instructions on the screen.

Info message
 Reset low temperature

NOTE

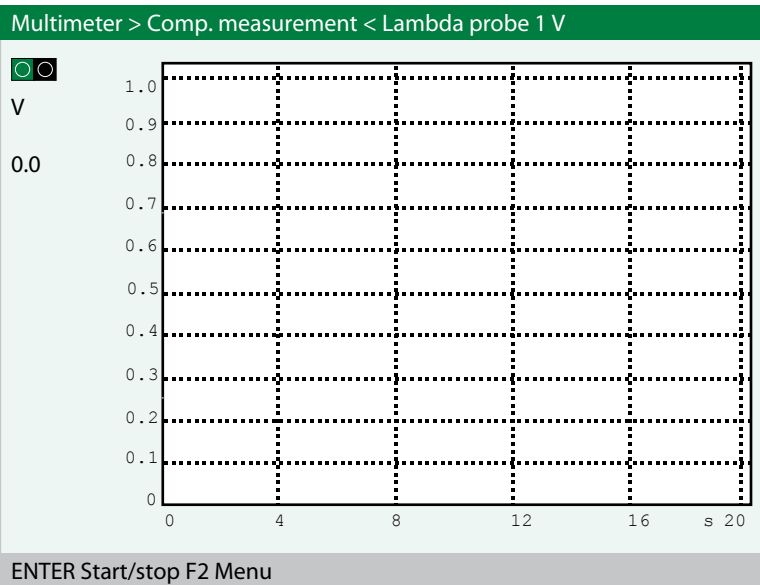
Temperatures are put in using the virtual keypad.

Component measurement

In order to simplify the measuring process for inexperienced users, the measuring ranges of mega macs 50 are preset to the values required for the component in the > Comp. measurement < menu.

1. Select and confirm > Comp. measurement <.  

2. Select and confirm > Component <.  



CAUTION

 50 Use the green/black connecting sockets for mega macs 50.

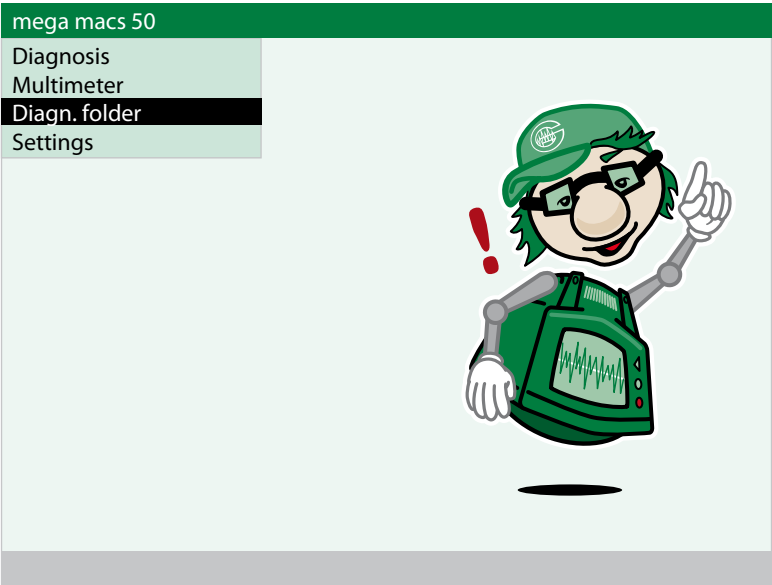
DIAGNOSIS FOLDER

All the values obtained from communication with the vehicle systems are automatically stored in the diagnosis folder.

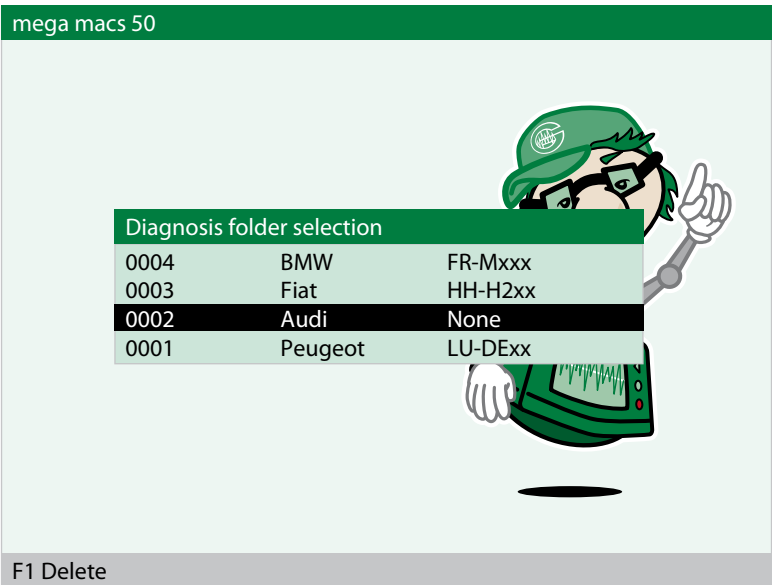
Vehicles stored in this way can be called up in the > Diagn. folder < menu. The data can be displayed directly on mega macs 50 or printed out by way of a PC with the > Gutmann Portal < programme.

Printing diagnosis folder

Steps:



1. Select and confirm > Diagn. folder <.  

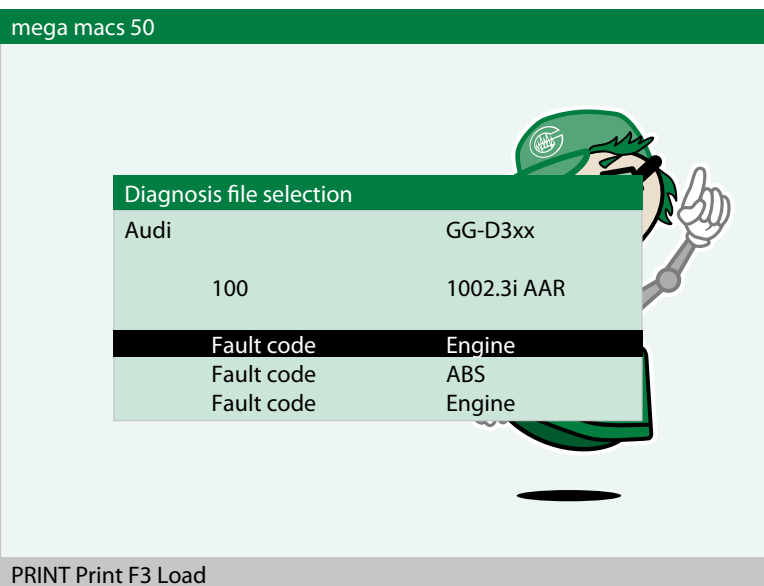


2. Select and confirm vehicle.  

NOTE

F1 Delete

The selected entry will be deleted.


NOTE

PRINT All the data will be printed out (see section B, page 1).
F3 Load Presentation of marked entries on mega macs 50

3. Select and confirm > Type of diagnosis < (in this case fault code).

NOTE

Multiple markings are possible and will be printed out accordingly.

4. Press > Print <; the marked entries will be printed.

5. Return with

Presentation of entries

Diagnosis file selection	
Audi	GG-D3xx
100	1002.3i AAR
Fault code	Engine
Fault code	ABS
Parameters	Engine

1. Select >Type of diagnosis< (in this case, parameters).
2. Press >F3<. The marked entries will be displayed.

NOTE

The display can be scrolled with the or .

GENERAL INFORMATION

Preliminary remark

All the instructions in the manual, which appear in the individual sections, are applicable. The following measures and safety precautions must also be observed. Furthermore pay attention to all instructions made by labour inspectorates, trade associations, vehicle manufacturers as well as all laws, legal ordinances and instructions, which have to be commonly obeyed by a workshop. The following is only an extract which is not intended to limit any other precautionary measures.

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Hella Gutmann Solutions accepts no liability for damages or operational disruptions resulting from a failure to observe the mega macs manual and the special safety precautions. The user of measuring devices is subject to the burden of proof that he has observed the technical explanations and the operating, care, maintenance and safety instructions without exception.

This exclusion of liability will not apply if damages arising out of a fatal or physical injury, or harm to the health, are attributable to a premeditated or negligent infringement of its duties by Hella Gutmann Solutions.

Safety precautions

Safety precautions regarding high voltage/mains voltage:

Very high voltages occur in electrical systems. Voltage flashovers from damaged parts (marten damage etc.) or physical contact with live components pose the risk of an electric shock.

- Use only electrical leads with a protective earthed contact.
- Use only genuine manufacturer's cable harnesses.
- Regularly inspect cables and the power supply unit for any damage.
- Always connect the earth lead from device to vehicle first
- Do not carry out any installation work, such as connecting the instrument or replacing components, when ignition is on.
- When working with ignition turned on, do not touch any live parts.

Safety precautions regarding the risk of asphyxiation:

Carbon monoxide is produced when the engine is running. If inhaled, this will lead to an oxygen deficiency in the blood (potentially fatal).

- Ensure that workshops are adequately ventilated.
- Always connect and switch on the exhaust gas extraction system when the engine is running.

Safety precautions regarding the risk of burn injuries:

When the engine is running, certain components become very hot (up to several hundred degrees C°).

- Always use safety equipment (protective gloves, etc.).
- Do not lay connecting leads near hot components.

Safety precautions regarding explosion hazard:

Work on the fuel system gives rise to a fire- and explosion hazard through petrol fumes:

- No naked flames
- No smoking.
- Ensure that the room is well ventilated.

Safety precautions regarding the risk of injury:

When the engine is running, injuries may arise from rotating parts (fan blades, belt drives, etc.). If the vehicle is not prevented from rolling away, you could be trapped by it.

- Keep the hands well clear of rotating parts when the engine is running.
- Prevent the car from rolling away unintentionally (handbrake).
- In the case of automatic vehicles, also set the selector lever to P position.
- Do no lay connecting leads near rotating parts.

Safety precautions regarding noise:

To prevent hearing defects, take the following measures:

- Protect workstations in the vicinity of the testing stations against noise.
- Use noise insulation equipment.

Safety precautions: Caustic injuries:

If the LCD display is damaged, the risk of caustic injuries will arise through the escape of crystal fluid. Wash any parts of the body or clothing immediately with water (consult a doctor).

- Consult a doctor immediately if the fluid has been inhaled or swallowed.

Safety precautions regarding mega macs 50

- Plug only the original power supply unit into the mains system (power supply 12 V).
- Do not connect anything to the vehicle if the engine is running.
- Inspect the leads to parts conducting high voltages for damage (marten damage, etc.)
- Protect the LCD display/instrument from prolonged exposure to bright sunlight.
- Protect the device and connecting lead against hot components.
- Protect the device against rotating components.
- Regularly inspect the connecting leads/accessories for damage (preventing the device from being damaged beyond repair by a short circuit).
- Connect the device only in accordance with the operator guidance/manual instructions.
- Protect the device from water (it is not watertight).
- Protect the device from hard knocks (do not allow it to fall).
- Only a technician authorised by Hella Gutmann Solutions is allowed to open the device.
- If the protective seal is broken or the instrument is subject to impermissible interventions, the guarantee will be invalidated.
- If the instrument develops faults, notify your Gutmann service engineer without delay.

Care/maintenance of mega macs 50

As with any measuring device, mega macs should be treated with care.

- Clean it regularly with mild cleaning agents.
- Use a standard domestic cleaning fluid and a soft, moistened cloth.
- Replace damaged cables/accessories immediately.
- Use only genuine manufacturer's spare parts.

Disposal

In compliance with Directive 2002/96/EC of the European Parliament and Council of 27 January 2003, relating to used electrical and electronic appliances, and the national statute governing the distribution, return and environmental disposal of electrical and electronic appliances (Elektro- und Elektronikgerategesetz - ElektroG) of 16 March 2005, we undertake to take back this device, distributed after 13.8.2005, at the conclusion of its useful life, free of charge, and to dispose of it in accordance with the aforesaid directives.

Since, in the case of the present device, this relates to an exclusively commercially used instrument (B2B), it must not be handed over to a public disposal facility.

Subject to the provision of the date of purchase and the instrument number, this instrument can be disposed of by:

Hella Gutmann Solutions GmbH
Am Krebsbach 2
D - 79241 Ihringen
WEEE-Reg.No. DE25419042
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